Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Black / PC-5M Black
PC-8K Black / PC-17K Black
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010101A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	72-75
	Resins	Registered	9-12
	Carbon black	1333-86-4	7-10
	Ethylene glycol	107-21-1	2- 5
	Ethyl alcohol	64-17-5	1- 4
	2-Propanol	67-63-0	< 2

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : (Information of components.)
<Carbon Black>
MAJOR HEALTH HAZARDS: suspect cancer hazard (in animals)
PHYSICAL HAZARDS: Dust/air mixtures may ignite or explode.

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product:
PC-3M; about 3.6g, PC-5M; about 7.2g, PC-8K; about 18.0g, PC-17K about 36.0g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

oxidizing materials;strong oxidizers <Resins>

oxidizing materials;halogens;Bromates,chlorates,nitrate,strong oxidizers <Carbon black>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 3.5mg/m3 <Carbon black>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 400ppm (980mg/m3) TWA, 500ppm (1230mg/m3) STEL <2-Propanol>

ACGIH : 3.5mg/m3 (total dust) <Carbon black>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
: 400pm TWA, 500ppm STEL <2-Propanol>

DFG : 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
: 500mg/m3 (200ml/m3) MAK <2-Propanol>

UK : 3.5mg/m3 TWA, 7mg/m3 STEL <Carbon black>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
: 400ppm (999mg/m3) TWA, 500ppm (1250mg/m3) STEL <2-Propanol>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Black.
Odour	: Faint odour.
pH	: 8.5±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C

Flashpoint : Not applicable. [2-Propanol / 11.7 C]
Autoignition temperature : Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %) : Not applicable.
[Lower flammable limit / 2.0 , Upper flammable limit / 8.0 <2-Propanol>]
Vapour density (air=1) : Not available. [2-Propanol / 2.07]
Density : 1.06±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available. [2-Propanol / 2.88]
Volatile (%) : 79-82%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

oxidizing materials;strong oxidizers <Resins>

oxidizing materials;halogens;Bromates,chlorates,nitrate,strong oxidizers <Carbon black>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
oxides of sulfur. <Carbon black>

11.TOXICOLOGICAL INFORMATION

(Information of components)
Acute toxicity
Ingestion LD50 : >=5000mg/kg-Rat <Resins>
: 10000mg/kg-Rat <Carbon black>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
: 3600mg/kg-Mouse <2-Propanol>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
: 11100ppm(4hours)-Mouse <2-Propanol>
Skin LD50 : >3000mg/kg-Rabbit <Carbon black>
: 9530uL/kg-Rabbit <Ethylene glycol>
: 13000mg/kg-Rabbit <2-Propanol>

Local effects
: Irritant; inhalation, skin <Carbon black>
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>
: Irritant: inhalation, eye <2-Propanol>

Chronic toxicity and long term toxicity
: Respiratory disorders. <Carbon Black>
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>
: Kidney disorders, liver disorders, respiratory disorders, skin disorders and allergies. <2-Propanol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation <Carbon black, Resins>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
	: irritation, nausea, headache, cough <2-Propanol>
Skin contact	: irritation <Carbon black, Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
	: irritation, redness, swelling, drunkness <2-Propanol>
Eye contact	: irritation <Resins>
	: irritation, discoloration of lids <Carbon black>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
	: irritation, pain, redness <2-Propanol>
Ingestion	: nausea, vomiting <Ethylene glycol>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
	: redness, swelling, nausea, stomach pain <2-Propanol>
Specific effects	: IARC group 2B <Carbon black>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>
	: IARC group 3 <2-Propanol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Carbon Black, Ethylene glycol, Ethyl alcohol, 2-Propanol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>
: F;R11, Xi;R36, R67 <2-Propanol>

R11: Highly flammable.
R22: Harmful if swallowed.
R36: Irritating to eye.
R67: Vapours may cause drowsiness and dizziness.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Carbon Black, Ethylene glycol, 2-Propanol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Blue / PC-5M Blue
PC-8K Blue / PC-17K Blue
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010102A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	57-60
	Titanium dioxide	13463-67-7	16-19
	Resins	Registered	10-13
	Ethyl alcohol	64-17-5	1- 4
	2-Propanol	67-63-0	1- 4
	Pigment Blue	Registered	1- 4
	Phthalocyanine Blue	147-148	1- 4
	Ethylene glycol	107-21-1	1- 4
	Silica (amorphous)	Registered	1- 4

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product:
PC-3M; about 4.0g, PC-5M; about 8.2g, PC-8K; about 20.4g, PC-17K; about 40.8g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Phthalocyanine Blue>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

acids, bases, Strong acid, strong alkalis <Silica (amorphous)>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 400ppm (980mg/m3) TWA, 500ppm (1230mg/m3) STEL <2-Propanol>
: 5mg/m3(respirable fraction), 15mg/m3(total dust) <Phthalocyanine Blue, Silica (amorphous)>

ACGIH : 10mg/m3 <Titanium dioxide>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
: 400pm TWA, 500ppm STEL <2-Propanol>
: 10mg/m3(total dust) <Phthalocyanine Blue, Silica (amorphous)>

DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
: 500mg/m3 (200ml/m3) MAK <2-Propanol>

UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
: 400ppm (999mg/m3) TWA, 500ppm (1250mg/m3) STEL <2-Propanol>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

JAIH : 2mg/m3(respirable fraction), 8mg/m3(total dust) <Pigment Blue>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	:	Low viscous liquid.
Colour	:	Blue.
Odour	:	Faint odour.
pH	:	8.4±1.0
Boiling point	:	Not available. [Ethyl alcohol / 78 C]
Melting point	:	< -10 C
Flashpoint	:	Not applicable. [2-Propanol / 11.7 C]
Autoignition temperature	:	Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	:	Not applicable.
		[Lower flammable limit / 2.0 , Upper flammable limit / 8.0 <2-Propanol>]
Vapour density (air=1)	:	Not available. [2-Propanol / 2.07]
Density	:	1.20±0.05
Solubility in water	:	Soluble.
Evaporation rate (Butyl acetate =1)	:	Not available. [2-Propanol / 2.88]
Volatile (%)	:	65-68%

10. STABILITY AND REACTIVITY

Stability	:	Stability.
Hazardous reactions	:	Will not occur.
Conditions to avoid	:	May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Phthalocyanine Blue>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

acids, bases, Strong acid, strong alkalis <Silica (amorphous)>

Hazardous decomposition products : (Information of components.)

oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of nitrogen. <Phthalocyanine Blue>
oxides of sodium. crystalline silica. <Silica (amorphous)>

11.TOXICOLOGICAL INFORMATION

(Information of components)
Acute toxicity

Ingestion LD50	: 10000mg/kg-Rat <Titanium dioxide>
	: >=5000mg/kg-Rat <Resins, Phthalocyanine Blue>
	: >=50mg/kg-Rat <Pigment Blue(as base dye.)>
	: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
	: 3450mg/kg-Mouse <Ethyl alcohol>
	: 3600mg/kg-Mouse <2-Propanol>
	: >10000mg/kg-Rat <Silica (amorphous)>
Inhalation LC50	: 10876mg/kg-Rat <Ethylene glycol>
	: 20000ppm(10hours)-Rat <Ethyl alcohol>
	: 11100ppm(4hours)-Mouse <2-Propanol>
Skin LD50	: 9530uL/kg-Rabbit <Ethylene glycol>
	: 13000mg/kg-Rabbit <2-Propanol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>
: Irritant: inhalation, eye <2-Propanol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>
: Kidney disorders, liver disorders, respiratory disorders, skin disorders and allergies. <2-Propanol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide>
	: irritation <Resins, Silica (amorphous)>
	: irritation, irritation of mucous membrance <Phthalocyanine Blue>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
	: irritation, nausea, headache, cough <2-Propanol>
Skin contact	: irritation <Resins, Silica (amorphous)>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
	: irritation, redness, swelling, drunkness <2-Propanol>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins, Silica (amorphous)>
	: mechanical irritation <Phthalocyanine Blue>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
	: irritation, pain, redness <2-Propanol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: gastric disturbances <Phthalocyanine Blue>
	: nausea, vomiting <Ethylene glycol>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
	: redness, swelling, nausea, stomach pain <2-Propanol>
Specific effects	: IARC group 3 <Titanium dioxide, 2-Propanol>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol, 2-Propanol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>
: F;R11, Xi;R36, R67 <2-Propanol>

R11: Highly flammable.
R22: Harmful if swallowed.
R36: Irritating to eye.
R67: Vapours may cause drowsiness and dizziness.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol, 2-Propanol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Red / PC-5M Red
PC-8K Red / PC-17K Red
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010103A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	69-72
	Resins	Registered	9-12
	Titanium dioxide	13463-67-7	7-10
	Pigment Red 1	Registered	6- 9
	Ethylene glycol	107-21-1	2- 5
	Ethyl alcohol	64-17-5	1- 4

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:
Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:
If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product:
PC-3M; about 3.7g, PC-5M; about 7.5g, PC-8K; about 18.7g, PC-17K; about 37.4g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:
Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:
Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:
Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature : 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Pigment Red 1>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA	: 15mg/m3(total dust) <Titanium dioxide>
	: 50ppm(125mg/m3)ceiling <Ethylene glycol>
	: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
ACGIH	: 10mg/m3 <Titanium dioxide>
	: 100mg/m3 ceiling (particulate) <Ethylene glycol>
	: 1000 ppm TWA <Ethyl alcohol>
DFG	: 6mg/m3(fine dust) <Titanium dioxide>
	: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
	: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
UK	: 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
	: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
	: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
EC	: 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Red.
Odour	: Faint odour.
pH	: 8.6±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]
Autoignition temperature	: Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	: Not applicable.

[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]

Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.10±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 75-78%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Pigment Red 1>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of nitrogen. <Pigment Red 1>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: >=5000mg/kg-Rat <Resins>
: >20000mg/kg-Rat <Pigment Red 1>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide>
	: irritation <Resins, Pigment Red 1>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
Skin contact	: irritation <Resins>
	: redness, swelling of skin <Pigment Red 1>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: fever, nausea <Pigment Red 1>
	: nausea, vomiting <Ethylene glycol>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
Specific effects	: IARC group 3 <Titanium dioxide>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.

Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted

UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Green / PC-5M Green
PC-8K Green / PC-17K Green
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010104A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	65-68
	Resins	Registered	11-14
	Titanium dioxide	13463-67-7	10-13
	Phthalocyanine Green	1328-53-6	4- 7
	Ethylene glycol	107-21-1	2- 5
	Ethyl alcohol	64-17-5	1- 4
	Pigment Yellow	Registered	< 2

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product:
PC-3M; about 3.9g, PC-5M; about 7.8g, PC-8K; about 19.4g, PC-17K; about 38.8g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature : 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Phthalocyanine Green, Pigment Yellow>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 15mg/m3 (nuisance dust) <Phthalocyanine Green>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
ACGIH : 10mg/m3 <Titanium dioxide>
: 10mg/m3 (nuisance dust) <Phthalocyanine Green>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Green.
Odour	: Faint odour.
pH	: 8.7±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]
Autoignition temperature	: Not applicable. [Ethyl alcohol / 392 C]

Explosion limits (vol %) : Not applicable.
[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]
Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.14±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 70-73%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Phthalocyanine Green, Pigment Yellow>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
cyanide, oxides of nitrogen. <Phthalocyanine Green>
oxides of zinc. <Pigment Yellow>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: >=5000mg/kg-Rat <Resins>
: >5000mg/kg-Rat <Phthalocyanine Green>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation : irritation, coughing <Titanium dioxide>
: irritation <Resins, Phthalocyanine Green, Pigment Yellow>
: irritation, headache <Ethylene glycol>
: irritation, difficulty breathing, headache <Ethyl alcohol>

Skin contact : irritation <Resins, Phthalocyanine Green>
: redness, swelling of skin <Pigment Yellow>
: irritation, redness <Ethylene glycol>
: irritation, rash, burn, eczema <Ethyl alcohol>

Eye contact : redness <Titanium dioxide>
: irritation <Resins, Phthalocyanine Green>
: irritation, redness <Ethylene glycol>
: irritation, tearing, burn <Ethyl alcohol>

Ingestion : Physiologically inert, Intestinal obstruction <Titanium dioxide>
: gastric disturbances <Phthalocyanine Green>
: nausea, vomiting <Ethylene glycol, Pigment Yellow>
: rash, vomiting, digestive disorders <Ethyl alcohol>

Specific effects : IARC group 3 <Titanium dioxide>
: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted

UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Brown / PC-5M Brown / PC-8K Brown
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010105A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	67-70
	Titanium dioxide	13463-67-7	10-13
	Resins	Registered	9-12
	Pigment Yellow	Registered	3- 6
	Pigment Red 1	Registered	2- 5
	Ethylene glycol	107-21-1	1- 4
	Ethyl alcohol	64-17-5	1- 4
	Phthalocyanine Blue	147-148	<0.1

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:

Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 3.8g, PC-5M; about 7.6g, PC-8K; about 19.0g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers
<Resins, Pigment Yellow, Pigment Red 1, Phthalocyanine Blue>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum
<Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(I) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide
<Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 5mg/m3(respirable fraction), 15mg/m3(total dust) <Phthalocyanine Blue>
ACGIH : 10mg/m3 <Titanium dioxide>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
: 10mg/m3(total dust) <Phthalocyanine Blue>
DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Brown.
Odour	: Faint odour.
pH	: 8.7±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]

Autoignition temperature : Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %) : Not applicable.
[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]
Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.12±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 72-75%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers
<Resins, Pigment Yellow, Pigment Red 1, Phthalocyanine Blue>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum
<Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide
<Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of nitrogen. <Pigment Red 1, Phthalocyanine Blue>
oxides of zinc. <Pigment Yellow>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: >=5000mg/kg-Rat <Resins, Phthalocyanine Blue>
: >20000mg/kg-Rat <Pigment Red 1>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation : irritation, coughing <Titanium dioxide>
: irritation <Resins, Pigment Yellow, Pigment Red 1>
: irritation, headache <Ethylene glycol>
: irritation, difficulty breathing, headache <Ethyl alcohol>
: irritation, irritation of mucous membrance <Phthalocyanine Blue>

Skin contact : irritation <Resins>
: redness, swelling of skin <Pigment Yellow, Pigment Red 1>
: irritation, redness <Ethylene glycol>
: irritation, rash, burn, eczema <Ethyl alcohol>

Eye contact : redness <Titanium dioxide>
: irritation <Resins>
: irritation, redness <Ethylene glycol>
: irritation, tearing, burn <Ethyl alcohol>
: mechanical irritation <Phthalocyanine Blue>

Ingestion : Physiologically inert, Intestinal obstruction <Titanium dioxide>
: fever, nausea <Pigment Red 1>
: nausea, vomiting <Ethylene glycol, Pigment Yellow>
: rash, vomiting, digestive disorders <Ethyl alcohol>
: gastric disturbances <Phthalocyanine Blue>

Specific effects : IARC group 3 <Titanium dioxide>
: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted

UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Yellow / PC-5M Yellow
PC-8K Yellow / PC-17K Yellow
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010106A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	70-73
	Titanium dioxide	13463-67-7	9-12
	Resins	Registered	8-11
	Pigment Yellow	Registered	5- 8
	Ethylene glycol	107-21-1	1- 4
	Ethyl alcohol	64-17-5	1- 4
	Pigment Orange 1	Registered	<0.5

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product:
PC-3M; about 3.8g, PC-5M; about 7.6g, PC-8K; about 19.0g, PC-17K; about 38.1g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature : 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Pigment Yellow, Pigment Orange 1>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 15mg/m3 <Pigment Orange 1>

ACGIH : 10mg/m3 <Titanium dioxide, Pigment Orange 1>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>

DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>

UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Yellow.
Odour	: Faint odour.
pH	: 8.6±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]
Autoignition temperature	: Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	: Not applicable.

[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]

Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.12±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 75-78%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Pigment Yellow, Pigment Orange 1>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of zinc. <Pigment Yellow>
oxides of nitrogen. <Pigment Orange 1>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: >=5000mg/kg-Rat <Resins, Pigment Orange 1>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation : irritation, coughing <Titanium dioxide>
: irritation <Resins, Pigment Yellow, Pigment Orange 1>
: irritation, headache <Ethylene glycol>
: irritation, difficulty breathing, headache <Ethyl alcohol>

Skin contact : irritation <Resins>
: redness, swelling of skin <Pigment Yellow, Pigment Orange 1>
: irritation, redness <Ethylene glycol>
: irritation, rash, burn, eczema <Ethyl alcohol>

Eye contact : redness <Titanium dioxide>
: irritation <Resins>
: irritation, redness <Ethylene glycol>
: irritation, tearing, burn <Ethyl alcohol>

Ingestion : Physiologically inert, Intestinal obstruction <Titanium dioxide>
: nausea, vomiting <Ethylene glycol, Pigment Yellow, Pigment Orange 1>
: rash, vomiting, digestive disorders <Ethyl alcohol>

Specific effects : IARC group 3 <Titanium dioxide>
: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Pink / PC-5M Pink
PC-8K Pink / PC-17K Pink
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010107A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	64-67
	Titanium dioxide	13463-67-7	14-17
	Resins	Registered	12-15
	Ethylene glycol	107-21-1	2- 5
	Ethyl alcohol	64-17-5	< 2
	Violet dyestuff	Registered	< 2
	Pigment Red 2	Registered	<0.5

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:

Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product:
PC-3M; about 3.9g, PC-5M; about 7.9g, PC-8K; about 19.7g, PC-17K; about 39.4g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Violet dyestuff, Pigment Red 2>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA	: 15mg/m3(total dust) <Titanium dioxide>
	: 50ppm(125mg/m3)ceiling <Ethylene glycol>
	: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
	: 15mg/m3 (nuisance dust) <Pigment Red 2>
ACGIH	: 10mg/m3 <Titanium dioxide>
	: 100mg/m3 ceiling (particulate) <Ethylene glycol>
	: 1000 ppm TWA <Ethyl alcohol>
	: 10mg/m3 (nuisance dust) <Pigment Red 2>
DFG	: 6mg/m3(fine dust) <Titanium dioxide>
	: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
	: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
UK	: 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
	: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
	: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
EC	: 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Pink.
Odour	: Faint odour.
pH	: 8.3±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]
Autoignition temperature	: Not applicable. [Ethyl alcohol / 392 C]

Explosion limits (vol %) : Not applicable.
[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]
Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.16±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 69-72%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.

Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Violet dyestuff, Pigment Red 2>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of nitrogen,hydrogen cyanide,formaldehyde,acrolein and other organic compounds. <Resins>
oxides of nitrogen. <Pigment Red 2>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: 1000mg/kg-Mouse <Resins>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
: 2950mg/kg-Mouse <Violet dyestuff>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide, Resins>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
	: irritation <Pigment Red 2>
Skin contact	: mechanical abrasion, irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
	: astringent, corrosive <Violet dyestuff>
	: redness, swelling of skin <Pigment Red 2>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: nausea, vomiting <Ethylene glycol, Violet dyestuff, Pigment Red 2>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
Specific effects	: IARC group 3 <Titanium dioxide, Resins>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted

UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Violet / PC-5M Violet / PC-8K Violet
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010108A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	65-68
	Resins	Registered	14-17
	Titanium dioxide	13463-67-7	10-13
	Ethylene glycol	107-21-1	2- 5
	Pigment Violet	Registered	< 2
	Ethyl alcohol	64-17-5	< 2
	Violet dyestuff	Registered	< 1

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:

Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 3.8g, PC-5M; about 7.6g, PC-8K; about 18.9g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Violet dyestuff, Pigment Violet>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA	: 15mg/m3(total dust) <Titanium dioxide>
	: 50ppm(125mg/m3)ceiling <Ethylene glycol>
	: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
ACGIH	: 10mg/m3 <Titanium dioxide>
	: 100mg/m3 ceiling (particulate) <Ethylene glycol>
	: 1000 ppm TWA <Ethyl alcohol>
DFG	: 6mg/m3(fine dust) <Titanium dioxide>
	: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
	: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
UK	: 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
	: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
	: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
EC	: 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Violet.
Odour	: Faint odour.
pH	: 8.3±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]
Autoignition temperature	: Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	: Not applicable.

[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]

Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.11±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 70-73%

10. STABILITY AND REACTIVITY

Stability : Stability.

Hazardous reactions : Will not occur.

Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Violet dyestuff, Pigment Violet>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of nitrogen,hydrogen cyanide,formaldehyde,acrolein and other organic compounds. <Resins>
miscellaneous decomposition products. <Pigment Violet>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: 1000mg/kg-Mouse <Resins>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
: >10000mg/kg-Rat <Pigment Violet>
: 2950mg/kg-Mouse <Violet dyestuff>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide, Resins>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
	: irritation <Pigment Violet>
Skin contact	: mechanical abrasion, irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
	: astringent, corrosive <Violet dyestuff>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: nausea, vomiting <Ethylene glycol, Violet dyestuff>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
Specific effects	: IARC group 3 <Titanium dioxide, Resins>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.

Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted

UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Orange / PC-5M Orange / PC-8K Orange
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010109A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	66-69
	Titanium dioxide	13463-67-7	12-15
	Resins	Registered	8-11
	Pigment Orange 1	Registered	4- 7
	Ethylene glycol	107-21-1	2- 5
	Ethyl alcohol	64-17-5	1- 4
	Pigment Red 1	Registered	<0.5

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:

Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 3.8g, PC-5M; about 7.7g, PC-8K; about 19.2g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Pigment Orange 1, Pigment Red 1>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 15mg/m3 <Pigment Orange 1>

ACGIH : 10mg/m3 <Titanium dioxide, Pigment Orange 1>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>

DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>

UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Orange.
Odour	: Faint odour.
pH	: 8.8±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]
Autoignition temperature	: Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	: Not applicable.

[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]

Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.13±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 72-75%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Pigment Orange 1, Pigment Red 1>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of nitrogen. <Pigment Orange 1, Pigment Red 1>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: >=5000mg/kg-Rat <Resins, Pigment Orange 1>
: >20000mg/kg-Rat <Pigment Red 1>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide>
	: irritation <Resins, Pigment Orange 1, Pigment Red 1>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
Skin contact	: irritation <Resins>
	: redness, swelling of skin <Pigment Orange 1, Pigment Red 1>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: fever, nausea <Pigment Red 1>
	: nausea, vomiting <Ethylene glycol, Pigment Orange 1>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
Specific effects	: IARC group 3 <Titanium dioxide>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.

Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted

UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Light blue / PC-5M Light blue
PC-8K Light blue / PC-17K Light blue
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010110A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	62-65
	Titanium dioxide	13463-67-7	23-26
	Resins	Registered	6- 9
	Ethyl alcohol	64-17-5	1- 4
	Ethylene glycol	107-21-1	1- 4
	2-Propanol	67-63-0	< 2
	Phthalocyanine Blue	147-148	<0.5

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:
Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:
If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product:
PC-3M; about 4.2g, PC-5M; about 8.4g, PC-8K; about 20.9g, PC-17K; about 41.8g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:
Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:
Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:
Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Phthalocyanine Blue>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 400ppm (980mg/m3) TWA, 500ppm (1230mg/m3) STEL <2-Propanol>
: 5mg/m3(respirable fraction), 15mg/m3(total dust) <Phthalocyanine Blue>

ACGIH : 10mg/m3 <Titanium dioxide>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
: 400pm TWA, 500ppm STEL <2-Propanol>
: 10mg/m3(total dust) <Phthalocyanine Blue>

DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
: 500mg/m3 (200ml/m3) MAK <2-Propanol>

UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
: 400ppm (999mg/m3) TWA, 500ppm (1250mg/m3) STEL <2-Propanol>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	:	Low viscous liquid.
Colour	:	Light blue.
Odour	:	Faint odour.
pH	:	8.4±1.0
Boiling point	:	Not available. [Ethyl alcohol / 78 C]
Melting point	:	< -10 C
Flashpoint	:	Not applicable. [2-Propanol / 11.7 C]
Autoignition temperature	:	Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	:	Not applicable.
		[Lower flammable limit / 2.0 , Upper flammable limit / 8.0 <2-Propanol>]
Vapour density (air=1)	:	Not available. [2-Propanol / 2.07]
Density	:	1.23±0.05
Solubility in water	:	Soluble.
Evaporation rate (Butyl acetate =1)	:	Not available. [2-Propanol / 2.88]
Volatile (%)	:	67-70%

10. STABILITY AND REACTIVITY

Stability	:	Stability.
Hazardous reactions	:	Will not occur.
Conditions to avoid	:	May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Phthalocyanine Blue>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Hazardous decomposition products : (Information of components.)

oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of nitrogen. <Phthalocyanine Blue>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity

Ingestion LD50	: 10000mg/kg-Rat <Titanium dioxide>
	: >=5000mg/kg-Rat <Resins, Phthalocyanine Blue>
	: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
	: 3450mg/kg-Mouse <Ethyl alcohol>
	: 3600mg/kg-Mouse <2-Propanol>
Inhalation LC50	: 10876mg/kg-Rat <Ethylene glycol>
	: 20000ppm(10hours)-Rat <Ethyl alcohol>
	: 11100ppm(4hours)-Mouse <2-Propanol>
Skin LD50	: 9530uL/kg-Rabbit <Ethylene glycol>
	: 13000mg/kg-Rabbit <2-Propanol>

Local effects

: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>
: Irritant: inhalation, eye <2-Propanol>

Chronic toxicity and long term toxicity

: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>
: Kidney disorders, liver disorders, respiratory disorders, skin disorders and allergies. <2-Propanol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide>
	: irritation <Resins>
	: irritation, irritation of mucous membrance <Phthalocyanine Blue>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
	: irritation, nausea, headache, cough <2-Propanol>
Skin contact	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
	: irritation, redness, swelling, drunkness <2-Propanol>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: mechanical irritation <Phthalocyanine Blue>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
	: irritation, pain, redness <2-Propanol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: gastric disturbances <Phthalocyanine Blue>
	: nausea, vomiting <Ethylene glycol>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
	: redness, swelling, nausea, stomach pain <2-Propanol>
Specific effects	: IARC group 3 <Titanium dioxide, 2-Propanol>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol, 2-Propanol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>
: F;R11, Xi;R36, R67 <2-Propanol>

R11: Highly flammable.
R22: Harmful if swallowed.
R36: Irritating to eye.
R67: Vapours may cause drowsiness and dizziness.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol, 2-Propanol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Light green / PC-5M Light green
PC-8K Light green
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010111A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	63-66
	Titanium dioxide	13463-67-7	20-23
	Resins	Registered	7-10
	Ethylene glycol	107-21-1	1- 4
	Ethyl alcohol	64-17-5	1- 4
	Pigment Yellow	Registered	< 2
	Phthalocyanine Green	1328-53-6	< 1

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 4.1g, PC-5M; about 8.2g, PC-8K; about 20.6g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Phthalocyanine Green, Pigment Yellow>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 15mg/m3 (nuisance dust) <Phthalocyanine Green>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
ACGIH : 10mg/m3 <Titanium dioxide>
: 10mg/m3 (nuisance dust) <Phthalocyanine Green>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Light green.
Odour	: Faint odour.
pH	: 8.5±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]
Autoignition temperature	: Not applicable. [Ethyl alcohol / 392 C]

Explosion limits (vol %) : Not applicable.
[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]
Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.21±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 68-71%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Phthalocyanine Green, Pigment Yellow>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
cyanide, oxides of nitrogen. <Phthalocyanine Green>
oxides of zinc. <Pigment Yellow>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: >=5000mg/kg-Rat <Resins>
: >5000mg/kg-Rat <Phthalocyanine Green>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation : irritation, coughing <Titanium dioxide>
: irritation <Resins, Phthalocyanine Green, Pigment Yellow>
: irritation, headache <Ethylene glycol>
: irritation, difficulty breathing, headache <Ethyl alcohol>

Skin contact : irritation <Resins, Phthalocyanine Green>
: redness, swelling of skin <Pigment Yellow>
: irritation, redness <Ethylene glycol>
: irritation, rash, burn, eczema <Ethyl alcohol>

Eye contact : redness <Titanium dioxide>
: irritation <Resins, Phthalocyanine Green>
: irritation, redness <Ethylene glycol>
: irritation, tearing, burn <Ethyl alcohol>

Ingestion : Physiologically inert, Intestinal obstruction <Titanium dioxide>
: gastric disturbances <Phthalocyanine Green>
: nausea, vomiting <Ethylene glycol, Pigment Yellow>
: rash, vomiting, digestive disorders <Ethyl alcohol>

Specific effects : IARC group 3 <Titanium dioxide>
: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted

UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Bright yellow / PC-5M Bright yellow
PC-8K Bright yellow
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010112A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	71-74
	Resins	Registered	8-11
	Titanium dioxide	13463-67-7	7-10
	Pigment Yellow	Registered	4- 7
	Ethylene glycol	107-21-1	1- 4
	Pigment Orange 1	Registered	1- 4
	Ethyl alcohol	64-17-5	< 2

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 3.8g, PC-5M; about 7.6g, PC-8K; about 18.9g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Pigment Yellow, Pigment Orange 1>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 15mg/m3 <Pigment Orange 1>
ACGIH : 10mg/m3 <Titanium dioxide, Pigment Orange 1>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Bright orange.
Odour	: Faint odour.
pH	: 8.7±1.0
Boiling point	: Not available. [Ethyl alcohol / 78 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethyl alcohol / 14 C]
Autoignition temperature	: Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	: Not applicable.

[Lower flammable limit / 3.3 , Upper flammable limit / 19.0 <Ethyl alcohol>]

Vapour density (air=1) : Not available. [Ethyl alcohol / 1.59]
Density : 1.11±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 76-79%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>
oxidizing materials;strong oxidizers <Resins, Pigment Yellow, Pigment Orange 1>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>
acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of zinc. <Pigment Yellow>
oxides of nitrogen. <Pigment Orange 1>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : 10000mg/kg-Rat <Titanium dioxide>
: >=5000mg/kg-Rat <Resins, Pigment Orange 1>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 3450mg/kg-Mouse <Ethyl alcohol>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
: 20000ppm(10hours)-Rat <Ethyl alcohol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide>
	: irritation <Resins, Pigment Yellow, Pigment Orange 1>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
Skin contact	: irritation <Resins>
	: redness, swelling of skin <Pigment Yellow, Pigment Orange 1>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: nausea, vomiting <Ethylene glycol, Pigment Yellow, Pigment Orange 1>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
Specific effects	: IARC group 3 <Titanium dioxide>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>

R11: Highly flammable.
R22: Harmful if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Light orange / PC-5M Light orange
PC-8K Light orange
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010113A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	60-63
	Titanium dioxide	13463-67-7	23-26
	Resins	Registered	8-11
	Ethyl alcohol	64-17-5	1- 4
	Ethylene glycol	107-21-1	1- 4
	2-Propanol	67-63-0	< 2
	Pigment Yellow	Registered	<0.5
	Pigment Orange 2	Registered	<0.5

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 4.2g, PC-5M; about 8.3g, PC-8K; about 20.7g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Pigment Yellow, Pigment Orange 2>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 400ppm (980mg/m3) TWA, 500ppm (1230mg/m3) STEL <2-Propanol>

ACGIH : 10mg/m3 <Titanium dioxide>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
: 400pm TWA, 500ppm STEL <2-Propanol>

DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
: 500mg/m3 (200ml/m3) MAK <2-Propanol>

UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
: 400ppm (999mg/m3) TWA, 500ppm (1250mg/m3) STEL <2-Propanol>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	:	Low viscous liquid.
Colour	:	Pale orange.
Odour	:	Faint odour.
pH	:	8.5±1.0
Boiling point	:	Not available. [Ethyl alcohol / 78 C]
Melting point	:	< -10 C
Flashpoint	:	Not applicable. [2-Propanol / 11.7 C]
Autoignition temperature	:	Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	:	Not applicable.
		[Lower flammable limit / 2.0 , Upper flammable limit / 8.0 <2-Propanol>]
Vapour density (air=1)	:	Not available. [2-Propanol / 2.07]
Density	:	1.22±0.05
Solubility in water	:	Soluble.
Evaporation rate (Butyl acetate =1)	:	Not available. [2-Propanol / 2.88]
Volatile (%)	:	66-69%

10. STABILITY AND REACTIVITY

Stability	:	Stability.
Hazardous reactions	:	Will not occur.
Conditions to avoid	:	May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins, Pigment Yellow, Pigment Orange 2>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Hazardous decomposition products : (Information of components.)

oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of zinc. <Pigment Yellow>
oxides of nitrogen and halides. <Pigment Orange 2>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity

Ingestion LD50	: 10000mg/kg-Rat <Titanium dioxide>
	: >=5000mg/kg-Rat <Resins>
	: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
	: 3450mg/kg-Mouse <Ethyl alcohol>
	: 3600mg/kg-Mouse <2-Propanol>
	: >15000mg/kg-Rat <Pigment Orange 2>
Inhalation LC50	: 10876mg/kg-Rat <Ethylene glycol>
	: 20000ppm(10hours)-Rat <Ethyl alcohol>
	: 11100ppm(4hours)-Mouse <2-Propanol>
Skin LD50	: 9530uL/kg-Rabbit <Ethylene glycol>
	: 13000mg/kg-Rabbit <2-Propanol>

Local effects

: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>
: Irritant: inhalation, eye <2-Propanol>

Chronic toxicity and long term toxicity

: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>
: Kidney disorders, liver disorders, respiratory disorders, skin disorders and allergies. <2-Propanol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide>
	: irritation <Resins, Pigment Yellow, Pigment Orange 2>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
	: irritation, nausea, headache, cough <2-Propanol>
Skin contact	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
	: irritation, redness, swelling, drunkness <2-Propanol>
	: redness, swelling of skin <Pigment Yellow>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
	: irritation, pain, redness <2-Propanol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: nausea, vomiting <Ethylene glycol, Pigment Yellow, Pigment Orange 2>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
	: redness, swelling, nausea, stomach pain <2-Propanol>
Specific effects	: IARC group 3 <Titanium dioxide, 2-Propanol>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol, 2-Propanol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>
: F;R11, Xi;R36, R67 <2-Propanol>

R11: Highly flammable.
R22: Harmful if swallowed.
R36: Irritating to eye.
R67: Vapours may cause drowsiness and dizziness.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol, 2-Propanol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Grey / PC-5M Grey / PC-8K Grey
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010114A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	60-63
	Titanium dioxide	13463-67-7	25-28
	Resins	Registered	6- 9
	Ethyl alcohol	64-17-5	1- 4
	Ethylene glycol	107-21-1	1- 4
	2-Propanol	67-63-0	< 2
	Carbon black	1333-86-4	<0.5

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available

Specific hazards : (Information of components.)
<Carbon Black>
MAJOR HEALTH HAZARDS: suspect cancer hazard (in animals)
PHYSICAL HAZARDS: Dust/air mixtures may ignite or explode.

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 4.3g, PC-5M; about 8.5g, PC-8K; about 21.3g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.

Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature：0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins>

oxidizing materials;halogens;Bromates,chlorates,nitrate,strong oxidizers <Carbon black>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 400ppm (980mg/m3) TWA, 500ppm (1230mg/m3) STEL <2-Propanol>
: 3.5mg/m3 <Carbon black>

ACGIH : 10mg/m3 <Titanium dioxide>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
: 400pm TWA, 500ppm STEL <2-Propanol>
: 3.5mg/m3 (total dust) <Carbon black>

DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
: 500mg/m3 (200ml/m3) MAK <2-Propanol>

UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
: 400ppm (999mg/m3) TWA, 500ppm (1250mg/m3) STEL <2-Propanol>
: 3.5mg/m3 TWA, 7mg/m3 STEL <Carbon black>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	:	Low viscous liquid.
Colour	:	Grey.
Odour	:	Faint odour.
pH	:	8.5±1.0
Boiling point	:	Not available. [Ethyl alcohol / 78 C]
Melting point	:	< -10 C
Flashpoint	:	Not applicable. [2-Propanol / 11.7 C]
Autoignition temperature	:	Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	:	Not applicable.
		[Lower flammable limit / 2.0 , Upper flammable limit / 8.0 <2-Propanol>]
Vapour density (air=1)	:	Not available. [2-Propanol / 2.07]
Density	:	1.25±0.05
Solubility in water	:	Soluble.
Evaporation rate (Butyl acetate =1)	:	Not available. [2-Propanol / 2.88]
Volatile (%)	:	66-69%

10. STABILITY AND REACTIVITY

Stability	:	Stability.
Hazardous reactions	:	Will not occur.
Conditions to avoid	:	May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins>

oxidizing materials;halogens;Bromates,chlorates,nitrate,strong oxidizers <Carbon black>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Hazardous decomposition products : (Information of components.)

oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>
oxides of sulfur. <Carbon black>

11.TOXICOLOGICAL INFORMATION

(Information of components)
Acute toxicity

Ingestion LD50	: 10000mg/kg-Rat <Titanium dioxide>
	: >=5000mg/kg-Rat <Resins>
	: 10000mg/kg-Rat <Carbon black>
	: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
	: 3450mg/kg-Mouse <Ethyl alcohol>
	: 3600mg/kg-Mouse <2-Propanol>
Inhalation LC50	: 10876mg/kg-Rat <Ethylene glycol>
	: 20000ppm(10hours)-Rat <Ethyl alcohol>
	: 11100ppm(4hours)-Mouse <2-Propanol>
Skin LD50	: >3000mg/kg-Rabbit <Carbon black>
	: 9530uL/kg-Rabbit <Ethylene glycol>
	: 13000mg/kg-Rabbit <2-Propanol>

Local effects
: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>
: Irritant: inhalation, eye <2-Propanol>
: Irritant; inhalation, skin <Carbon black>

Chronic toxicity and long term toxicity
: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>
: Kidney disorders, liver disorders, respiratory disorders, skin disorders and allergies. <2-Propanol>
: Respiratory disorders. <Carbon Black>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide>
	: irritation <Carbon black, Resins>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
	: irritation, nausea, headache, cough <2-Propanol>
Skin contact	: irritation <Carbon black, Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
	: irritation, redness, swelling, drunkness <2-Propanol>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: irritation, discoloration of lids <Carbon black>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
	: irritation, pain, redness <2-Propanol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: nausea, vomiting <Ethylene glycol>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
	: redness, swelling, nausea, stomach pain <2-Propanol>
Specific effects	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>
	: IARC group 2B <Carbon black>
	: IARC group 3 <Titanium dioxide, 2-Propanol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Carbon Black, Ethylene glycol, Ethyl alcohol, 2-Propanol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>
: F;R11, Xi;R36, R67 <2-Propanol>

R11: Highly flammable.
R22: Harmful if swallowed.
R36: Irritating to eye.
R67: Vapours may cause drowsiness and dizziness.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Carbon Black, Ethylene glycol, 2-Propanol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M White / PC-5M White
PC-8K White / PC-17K White
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010115A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	59-62
	Titanium dioxide	13463-67-7	26-29
	Resins	Registered	6- 9
	Ethyl alcohol	64-17-5	1- 4
	Ethylene glycol	107-21-1	1- 4
	2-Propanol	67-63-0	< 2

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:

Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product:
PC-3M; about 4.3g, PC-5M; about 8.6g, PC-8K; about 21.4g, PC-17K; about 42.8g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature : 0-30 C.

Incompatible products : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 15mg/m3(total dust) <Titanium dioxide>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>
: 1000 ppm (1900 mg/m3) TWA <Ethyl alcohol>
: 400ppm (980mg/m3) TWA, 500ppm (1230mg/m3) STEL <2-Propanol>

ACGIH : 10mg/m3 <Titanium dioxide>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>
: 1000 ppm TWA <Ethyl alcohol>
: 400pm TWA, 500ppm STEL <2-Propanol>

DFG : 6mg/m3(fine dust) <Titanium dioxide>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
: 960 mg/m3 (500 ml/m3) MAK <Ethyl alcohol>
: 500mg/m3 (200ml/m3) MAK <2-Propanol>

UK : 4mg/m3(respirable dust), 10mg/m3(total inhalable dust) <Titanium dioxide>
: 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>
: 1000 ppm (1920 mg/m3) TWA <Ethyl alcohol>
: 400ppm (999mg/m3) TWA, 500ppm (1250mg/m3) STEL <2-Propanol>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	:	Low viscous liquid.
Colour	:	White.
Odour	:	Faint odour.
pH	:	8.4±1.0
Boiling point	:	Not available. [Ethyl alcohol / 78 C]
Melting point	:	< -10 C
Flashpoint	:	Not applicable. [2-Propanol / 11.7 C]
Autoignition temperature	:	Not applicable. [Ethyl alcohol / 392 C]
Explosion limits (vol %)	:	Not applicable.
		[Lower flammable limit / 2.0 , Upper flammable limit / 8.0 <2-Propanol>]
Vapour density (air=1)	:	Not available. [2-Propanol / 2.07]
Density	:	1.26±0.05
Solubility in water	:	Soluble.
Evaporation rate (Butyl acetate =1)	:	Not available. [2-Propanol / 2.88]
Volatile (%)	:	65-68%

10. STABILITY AND REACTIVITY

Stability	:	Stability.
Hazardous reactions	:	Will not occur.
Conditions to avoid	:	May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

metals, Aluminum, calcium, lithium, Magnesium, potassium, sodium, zinc <Titanium dioxide>

oxidizing materials;strong oxidizers <Resins>

strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum <Ethylene glycol>

acetic anhydride and sodium hydrogen sulfate, aluminum sesquibromide ethylate, ammonium hydroxide and silver(Ⅰ) oxide, barium perchlorate, bromine pentafluoride, calcium hypochlorite, dioxygen difluoride, fluorine nitrate, hydrogen peroxide <Ethyl alcohol>

aluminum, barium perchlorate, hydrogen peroxide, strong oxidizers, phosgene, sodium dichromate + sulfuric acid, chromium trioxide, dioxygenyl tetrafluoroborate, hydrogen + palladium(particles), nitroform(trinitrimethane), potassium tert-butoxide, ketones <2-Propanol>

Hazardous decomposition products : (Information of components.)

oxides of carbon, water. < common decomposition products.>
Hazardous fumes of titanium oxide. <Titanium dioxide>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity

Ingestion LD50	: 10000mg/kg-Rat <Titanium dioxide>
	: >=5000mg/kg-Rat <Resins>
	: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
	: 3450mg/kg-Mouse <Ethyl alcohol>
	: 3600mg/kg-Mouse <2-Propanol>
Inhalation LC50	: 10876mg/kg-Rat <Ethylene glycol>
	: 20000ppm(10hours)-Rat <Ethyl alcohol>
	: 11100ppm(4hours)-Mouse <2-Propanol>
Skin LD50	: 9530uL/kg-Rabbit <Ethylene glycol>
	: 13000mg/kg-Rabbit <2-Propanol>

Local effects

: Irritant; inhalation, skin, eye <Ethylene glycol, Ethyl alcohol>
: Irritant: inhalation, eye <2-Propanol>

Chronic toxicity and long term toxicity

: Central nervous system depressant. <Ethylene glycol>
: Central nervous system depressant, kidney disorders, liver disorders. <Ethyl alcohol>
: Kidney disorders, liver disorders, respiratory disorders, skin disorders and allergies. <2-Propanol>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation	: irritation, coughing <Titanium dioxide>
	: irritation <Resins>
	: irritation, headache <Ethylene glycol>
	: irritation, difficulty breathing, headache <Ethyl alcohol>
	: irritation, nausea, headache, cough <2-Propanol>
Skin contact	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, rash, burn, eczema <Ethyl alcohol>
	: irritation, redness, swelling, drunkness <2-Propanol>
Eye contact	: redness <Titanium dioxide>
	: irritation <Resins>
	: irritation, redness <Ethylene glycol>
	: irritation, tearing, burn <Ethyl alcohol>
	: irritation, pain, redness <2-Propanol>
Ingestion	: Physiologically inert, Intestinal obstruction <Titanium dioxide>
	: nausea, vomiting <Ethylene glycol>
	: rash, vomiting, digestive disorders <Ethyl alcohol>
	: redness, swelling, nausea, stomach pain <2-Propanol>
Specific effects	: IARC group 3 <Titanium dioxide, 2-Propanol>
	: IARC group 1 (Alcohol beverages) <Ethyl alcohol>

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Titanium dioxide, Ethylene glycol, Ethyl alcohol, 2-Propanol>

EU rabeling : 25%<=Xn;R22 <Ethylene glycol>
: F;R11 <Ethyl alcohol>
: F;R11, Xi;R36, R67 <2-Propanol>

R11: Highly flammable.
R22: Harmful if swallowed.
R36: Irritating to eye.
R67: Vapours may cause drowsiness and dizziness.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 0.1% over <Ethyl alcohol>
: 1% over <Ethylene glycol, 2-Propanol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Gold / PC-5M Gold
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010116A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	62-65
	Resin	Registered	10-13
	Aluminum paste	7429-90-5	8-11
	Pigment Yellow	Registered	4- 7
	Ethylene glycol	107-21-1	2- 5
	Polyoxyethylene nonylphenyl ether	9016-45-9	2- 5
	Additive	Registered	1- 4
	Solvent naphtha	Registered	1- 4
	Pigment Red	Registered	< 1

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 3.7g, PC-5M; about 6.9g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.

Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature : 0-30 C.

Incompatible products : (Information of components.)

acids, alcohols, ammonium nitrate, ammonium peroxodisulfate, antimony,antimony trichloride, arsenic, barium peroxide, bases, bismuth, bismuth trioxide, bromine, bromine pentafluoride, carbon dioxide, carbon dioxide+aluminum halides, carbon disulfide, carbon tetrachlorid
<Aluminum paste>

oxidizing materials;strong oxidizers
<Pigment Yellow, Solvent naphtha, Polyoxyethylene nonylphenyl ether>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum
<Ethylene glycol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA : 5mg/m3(Respirable fraction), 15mg/m3(Total dust) <Aluminum paste>
: 500ppm, 29000mg/m3 <Solvent naphtha>
: 50ppm(125mg/m3)ceiling <Ethylene glycol>

ACGIH : 5mg/m3(pyro poeders), 10mg/m3(metal dust) <Aluminum paste>
: 100ppm <Solvent naphtha>
: 100mg/m3 ceiling (particulate) <Ethylene glycol>

DFG : 6mg/m3(fine dust) <Aluminum paste>
: 26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>

UK : 10mg/m3 TWA(particulate), 60mg/m3 TWA(vapour), 125mg/m3 STEL(vapour) <Ethylene glycol>

EC : 20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

JAIH : 2mg/m3(Respirable fraction), 8mg/m3(Total dust) <Pigment Red>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form : Low viscous liquid.
Colour : Gold.
Odour : Faint odour.
pH : 8.0±1.0
Boiling point : Not available. [Water / 100 C]

Melting point : < -10℃
Flashpoint : Not applicable. [Ethylene glycol / 111 C]
Autoignition temperature : Not applicable. [Ethylene glycol / 398 C]
Explosion limits (vol %) : Not applicable.
[Lower flammable limit / 3.2 , Upper flammable limit / 15.3 <Ethylene glycol>]
Vapour density (air=1) : Not available. [Ethylene glycol / 2.14]
Density : 1.07±0.05
Solubility in water : Soluble.
Evaporation rate (Butyl acetate =1) : Not available.
Volatile (%) : 69-72%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

acids, alcohols, ammonium nitrate, ammonium peroxodisulfate, antimony,antimony trichloride, arsenic, barium peroxide, bases, bismuth, bismuth trioxide, bromine, bromine pentafluoride, carbon dioxide, carbon dioxide+aluminum halides, carbon disulfide, carbon tetrachlorid
<Aluminum paste>

oxidizing materials;strong oxidizers
<Pigment Yellow, Solvent naphtha, Polyoxyethylene nonylphenyl ether>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum
<Ethylene glycol>

Hazardous decomposition products : (Information of components.)
oxides of carbon, water. < common decomposition products.>
Acrid smoke and irritating fume. <Aluminum paste>
miscellaneous decomposition products.
<Solvent naphtha, Polyoxyethylene nonylphenyl ether>
oxides of nitrogen, acid halides. <Pigment Yellow>

11.TOXICOLOGICAL INFORMATION

(Information of components)

Acute toxicity
Ingestion LD50 : >5000mg/kg-Rat <Aluminum paste, Pigment Yellow>
: >2150mg/kg-Quail, 8400mg/kg-Rat <Solvent naphtha>
: 1650mg/kg-Cat, 7500mg/kg-Mouse <Ethylene glycol>
: 1310mg/kg-Rat <Polyoxyethylene nonylphenyl ether>
Inhalation LC50 : 10876mg/kg-Rat <Ethylene glycol>
Skin LD50 : 9530uL/kg-Rabbit <Ethylene glycol>

Local effects
: Irritant; inhalation, skin, eye <Aluminum paste, Ethylene glycol>
: Irritant; eye <Polyoxyethylene nonylphenyl ether>

Chronic toxicity and long term toxicity
: Asthma and kidney disorders. <Aluminum paste>
: Central nervous system depressant. <Ethylene glycol, Solvent naphtha>

Signs and Symptos of overexposure and aggravated by exposure

Inhalation : irritation, coughing, metallic taste, chills <Aluminum paste>
: irritation, nausea <Solvent naphtha>
: irritation, headache <Ethylene glycol>
: irritation <Pigment Yellow, Polyoxyethylene nonylphenyl ether, Additive>

Skin contact : irritation, itching <Aluminum paste>
: irritation <Solvent naphtha, Polyoxyethylene nonylphenyl ether>
: irritation, redness <Ethylene glycol>

Eye contact : irritation, eye damage
<Aluminum paste, Polyoxyethylene nonylphenyl ether>
: irritation, tearing <Solvent naphtha>
: irritation, redness <Ethylene glycol>

Ingestion : stomach irritation, digestive disorders <Aluminum paste>
: irritation, nausea <Solvent naphtha>
: nausea, vomiting <Pigment Yellow, Ethylene glycol>
: digestive disorders, diarrhea <Polyoxyethylene nonylphenyl ether>

Specific effects : Not available.

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.

Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted

UN classification number : Not applicable

15. REGULATORY INFORMATION

Regulations (Information of components)

Hazardous chemicals (OSHA HCS)
: <Aluminum paste, Ethylene glycol>

EU rabeling : F;R15-17 <Aluminum paste>
: 25%<=Xn;R22 <Ethylene glycol>
: 10%<=T;R65 <Polyoxyethylene nonylphenyl ether>

R15: Contact with water liberates extremely flammable gases.
R17: Spontaneously flammable in air.
R22: Harmful if swallowed.
R65: Harmful: may cause lung damage if swallowed.

CANADA Hazardous Products Act - Ingredient Disclosure List
: 1% over <Aluminum paste, Ethylene glycol>

Hazard and safety information

Products are manufactured in accordance with European regulation EN71 part 3

16. OTHER INFORMATION

This sheet completes the technical sheet of use but it doesn't replace it.
The information contained in this sheet are based knowledge of the products at the data : (JULY 12, 2001). They are given quite sincerely.
Moreover the attention of the users is drawn on the risks possibly taken, when a product is used for other utilization than these which it is intended.

Safety data sheet for chemical products

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PC-3M Silver / PC-5M Silver
(uni POSCA POSTER COLOUR MARKERS)

Manufacture's name : MITSUBISHI PENCIL CO.,LTD
Address : 5-23-37, HIGASHIOHI, SHINAGAWA, TOKYO, JAPAN
Telephone number : 03-3458-6281 Telefax number : 03-3450-0363
Telex number : 2422337 MBPENC J.
Prepared by : KAZUHIRO OYAIZU

Creation Date : JULY 12, 2001
File No. : 010117A

2. COMPOSITION/INFORMATION ON INGREDIENTS

The chemical product is a substance or a preparation: Preparation

Chemical nature:

<Component parts>	<Chemical or generic name>	<CAS No.>	<Concentration range (wt%)>
Ink	Water	7732-18-5	67-70
	Aluminum paste	7429-90-5	10-13
	Resin	Registered	9-12
	Solvent naphtha	Registered	2- 5
	Ethylene glycol	107-21-1	2- 5
	Polyoxyethylene nonylphenyl ether	9016-45-9	2- 5

Other parts : Other parts are excluded from 'chemical susbstances'.

3. HAZARDS IDENTIFICATION

Most important hazards : Not available
Specific hazards : Not available

4. FIRST-AID MEASURES

Inhalation:
Not applicable. (Due to its low vapor pressure. Inhalation is unlikery at room temperature.)

Skin contact:
Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eye contact:

Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains. (at least 15-20 minutes) Get medical attention immediately.

Ingestion:

If swallowed, seek medical adivice, and show the MSDS to the physician then.
[Ink quanity of product: PC-3M; about 3.6g, PC-5M; about 6.8g]

5. FIRE-FIGHTING MEASURES

Fire and explosion measures : Slight fire hazard.

Exitinguishing media:

Suitable : regular dry chemical, carbon dioxide, water, regular foam.
Large fires : Use regular foam or flood with fine water spray.

Fire fighting : The Product is no flammable.
Move container from fire area if it can be done without risk. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Not available

Environmental precautions : Do not wash away into shower or water way.

Methods for cleaning up : Wipe off by dry cloth and wash with water.
: In accordance with national, state and local regulations.

7. HANDLING AND STORAGE

Store and handle in accordance with all current regulations and standards.
Keep separated from incompatible substances.

Handling:

Technical measures : Don't swallow ink.
: Recap after use.
: Keep out of the reach of children.
: Avoid contact with skin and eyes.
Precautions : Not available
Safe handling advice : Not available

Storage:

Technical measures : Keep away from oxidizing materials, ignition sources and high temperature.
Stroage condition : Avoid direct sunlight.
: Do not leave the products in high temperature space
: Recommended temperature: 0-30 C

Incompatible products : (Information of components.)

acids, alcohols, ammonium nitrate, ammonium peroxodisulfate, antimony,antimony trichloride, arsenic, barium peroxide, bases, bismuth, bismuth trioxide, bromine, bromine pentafluoride, carbon dioxide, carbon dioxide+aluminum halides, carbon disulfide, carbon tetrachlorid
<Aluminum paste>

oxidizing materials;strong oxidizers <Solvent naphtha, Polyoxyethylene nonylphenyl ether>
strong oxidizers; phosphorus(V) sulfide; sodium hydroxide;chromium trioxide; dimethyl terephthalate + titanium butoxide; potassium permanganate; silvered copper wire; sodium peroxide; perchloric acid; strong bases; chlorosulfonic acid; oleum
<Ethylene glycol>

Packaging materials : Not applicable.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Engineering measures : Not required

Control parameters (Information of components.)

OSHA	:	5mg/m3(Respirable fraction), 15mg/m3(Total dust) <Aluminum paste>
	:	500ppm, 29000mg/m3 <Solvent naphtha>
	:	50ppm(125mg/m3)ceiling <Ethylene glycol>
ACGIH	:	5mg/m3(pyro poeders), 10mg/m3(metal dust) <Aluminum paste>
	:	100ppm <Solvent naphtha>
	:	100mg/m3 ceiling (particulate) <Ethylene glycol>
DFG	:	6mg/m3(fine dust) <Aluminum paste>
	:	26mg/m3 (10ml/m3) DFG MAK 1 times/shift <Ethylene glycol>
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EC	:	20ppm, 52mg/m3(8 hours), 40ppm, 104mg/m3(short-term) <Ethylene glycol>

Personal protective equipment : Not required

9. PHYSICAL AND CHEMICAL PROPERTIES

[ ] : Information of components.

Physical state and form	: Low viscous liquid.
Colour	: Silver.
Odour	: Faint odour.
pH	: 8.6±1.0
Boiling point	: Not available. [Water / 100 C]
Melting point	: < -10 C
Flashpoint	: Not applicable. [Ethylene glycol / 111 C]
Autoignition temperature	: Not applicable. [Ethylene glycol / 398 C]
Explosion limits (vol %)	: Not applicable.
	[Lower flammable limit / 3.2 , Upper flammable limit / 15.3 <Ethylene glycol>]
Vapour density (air=1)	: Not available. [Ethylene glycol / 2.14]
Density	: 1.07±0.05
Solubility in water	: Soluble.
Evaporation rate (Butyl acetate =1)	: Not available.
Volatile (%)	: 76-79%

10. STABILITY AND REACTIVITY

Stability : Stability.
Hazardous reactions : Will not occur.
Conditions to avoid : May burn dose not ignite ready. Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials

Materials to avoid : (Information of components.)

acids, alcohols, ammonium nitrate, ammonium peroxodisulfate, antimony,antimony trichloride, arsenic, barium peroxide, bases, bismuth, bismuth trioxide, bromine, bromine pentafluoride, carbon dioxide, carbon dioxide+aluminum halides, carbon disulfide, carbon tetrachlorid
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: Irritant; eye <Polyoxyethylene nonylphenyl ether>

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: irritation, headache <Ethylene glycol>
: irritation <Polyoxyethylene nonylphenyl ether>

Skin contact : irritation, itching <Aluminum paste>
: irritation <Solvent naphtha, Polyoxyethylene nonylphenyl ether>
: irritation, redness <Ethylene glycol>
Eye contact : irritation, eye damage
<Aluminum paste, Polyoxyethylene nonylphenyl ether>
: irritation, tearing <Solvent naphtha>
: irritation, redness <Ethylene glycol>
Ingestion : stomach irritation, digestive disorders <Aluminum paste>
: irritation, nausea <Solvent naphtha>
: nausea, vomiting <Ethylene glycol>
: digestive disorders, diarrhea <Polyoxyethylene nonylphenyl ether>

Specific effects : Not available.

12. ECOLOGICAL INFORMATION

Not available.

13. DISPOSAL CONSIDERATIONS

Waste from residues : Disposal in accordance with all current regulations and standards.
Contaminated packaging : Not applicable.

14. TRANSPORT INFORMATION

International regulations : Not restricted
UN classification number : Not applicable

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